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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

HUAWEI TECHNOLOGIES CO., LTD., HUAWEI DEVICE USA, INC., and HUAWEI TECHNOLOGIES USA, INC.,

Plaintiffs / Counterclaim-Defendants,

v.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC.,

Defendants / Counterclaim-Plaintiffs,

and

SAMSUNG RESEARCH AMERICA,

Defendant,

v.

HISILICON TECHNOLOGIES CO., LTD.,

Counterclaim-Defendant.

Case No. 3:16-cv-2787-WHO

EXPERT REPORT OF DAVID LYON, PH.D. REGARDING NONINFRINGEMENT OF U.S. PATENT NO. 8,724,613

relates to MBMS in LTE. As I detail below, TS 36.331 v8.4.0 was one of the earliest releases that disclosed the use of MBSFN in LTE. In Release 8, 3GPP had not finalized or even set forth any specifications for how multicast services would be transmitted and received in the LTE network. In fact, the Release 8 LTE standards do not provide a UE manufacturer necessary information required to implement MBMS services.

59. As further evidence that TS 36.331 v8.4.0 did not set forth how multicast services would be supported in the standard, TS 36.331 v8.4.0 only contains a single use of the term MBMS, which is located in the glossary of abbreviations. A simple text search reveals that the term MBMS is not used anywhere else in TS 36.331 v8.4.0. By contrast, TS 36.331 v9.2.0 and later versions have dedicated sections titled "MBMS" and "MBMS information elements" which describe how scheduling of MBMS services are accomplished and how MBMS data associated with such services are transmitted and received in the LTE network. TS 36.331 v9.2.0, Sections 5.8. and 6.3.7.[1] Neither Huawei in its infringement contentions nor Dr. Akl in his opening expert report identify these MBMS sections in TS 36.331 v9.2.0 and later versions. Instead, they rely on their incorrect understanding of MBMS in TS 36.331 and point to the incomplete standards on MBSFN frames and subframes set forth in TS 36.331 v8.4.0 to allege the Accused Products infringe the '613 patent. Since TS 36.331 v8.4.0 does not set forth how a UE should receive MBMS services or any position information associated with MBSFN frames and subframes that actually contain MBMS service information, a UE operating based on the disclosures in TS 36.331 v8.4.0 and the disclosures that Dr. Akl identifies in his Opening Report cannot infringe the asserted claims.

[1] MBMS for LTE was specified in Release 9. However, enhancements were made in Release 10. *See* LTE Broadcast Technology is Ready to Deploy and Evolve (HW_Samsung_00848373-387) at 2. For my analysis below, I rely on Release 10 to show the eMBMS standards that were added after Release 8.

transmitted in SIB2. He contends that "subframeAllocation," transmitted in MBSFN_SubframeConfiguration in SIB2 is an indication of the subframes that are allocated for MBSFN within "radioFrameAllocation." Akl Opening Report at ¶¶ 85, 103-104; TS 36.331 v8.4.0, Section 6.3.1.

64. Dr. Akl, however, fails to state that MBSFN_SubframeConfiguration in SIB2 merely sets forth the subframes that are *reserved* for MBSFN in downlink. The MBSFN frames and subframes can be "reserved" by the base station for other purposes, not as an indication of the frames and subframes that will all contain MBMS services. For example, MBSFN_SubframeConfiguration in SIB2 can inform the MBMS-processing portions of the UE which of the received subframes can be ignored since they cannot be bearing MBMS services. However, this does not mean that the MBSFN subframes identified in MBSFN-SubframeConfiguration identify the MBSFN subframes that actually contain MBMS services—these are merely "reserved" subframes. The identified MBSFN subframes in MBSFN_SubframeConfiguration in SIB2 may or may not eventually contain MBMS service information, and therefore, they do not indicate position information of actually transmitted specific radio frames carrying MBMS services.

65. Further describing the role of SIB2 is SIB2's mbsfn-SubframeConfigList, which is set forth in the following sections of TS 36.331 and TS 36.213. First referring to §5.2.2.9 of TS 36.331, the standard has the following relevant statements:

> In the subframes indicated by the higher layer parameter *mbsfn-SubframeConfigList* except the subframes indicated by higher layers to decode PMCH, when a UE is configured in transmission mode 9, the UE shall upon detection of a PDCCH with CRC scrambled by the C-RNTI with DCI format 1A or 2C intended for the UE, decode the corresponding PDSCH in the same subframe.

> In the subframes indicated by the higher layer parameter *mbsfn-SubframeConfigList* except the subframes indicated by higher layers to decode PMCH, when a UE is configured in transmission mode 9, the UE shall upon detection of a PDCCH with CRC scrambled by the SPS C-RNTI with DCI format 1A or 2C or for a configured PDSCH without PDCCH intended for the UE, decode the corresponding PDSCH in the same subframe.

TS 36.213 v10.2.0, Section 7.1.

67. In summary, the two 3GPP documents together (36.331 and 36.213) are specifying that the MBSFN-SubframeConfig information carried in SIB2 is transmitted to the UE to let the UE know that most of the time it does not have to look for PDSCH formatted information in those subframes. However, it goes further and dictates some circumstances (namely when the UE is in transmission mode 9 AND the subframes are not designated as PMCH subframes by higher layers) when even the subframes indicated by MBSFN-SubframeConfig in SIB2 can be used for PDSCH transmissions. None of these SIB2 related specifications speak to the establishment and control of MBMS services conveyed over any of these MBSFN eligible subframes, as compared to TS 36.331 v. 10.0.0 Section 5.8 and the clear teaching of the role of SIB13 and the MBSFNAreaConfiguration message and the IEs and fields contained therein. The use of the MBSFN_SubframeConfiguration information in SIB2 is to alert the UE to which subframes are eligible to convey MBMS services, and under what narrow conditions those same subframes may carry PDSCH—not an indication of position information of the subframes that actually contain transmitted MBMS services.

68. A presentation from Qualcomm illustrates how SIB2 merely reserves MBSFN subframes by creating a list. Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867.

nor Dr. Akl could map this claim limitation to 3GPP TS 36.331 v8.4.0, because his version of the standard did not contain any information on transmitting or receiving MBMS services in LTE. TS 36.331 v8.4.0 was one of the first versions to include MBSFN in the LTE standard, but it did not set forth specifications describing how a UE could actually receive MBMS services. It was not until later versions, beginning with Release 9, that the LTE Standard began to set forth the necessary specifications to enable transmitting and receiving MBMS services over the LTE network.

2. 3GPP LTE Release 9 Standards and Later

70. 3GPP began identifying the details of transmitting and receiving MBMS service information to fully enable the commercial launch of MBMS services over LTE networks in Release 9 of the LTE standards and set forth additional enhancements in Release 10 of the LTE standards. Prior to Release 9, a UE manufacturer could not have built a fully operational UE that could receive and process MBMS services in LTE, because that portion of the standard had not yet been completed and incorporated in the standard, and was therefore, not available for incorporation into product embodiments.

71. While these later standards still set forth specifications for a UE to receive SIB2, the MBSFN-SubframeConfig information element transmitted in SIB2 contains a single set of position information to indicate *reservation* of frames and subframes that *might* carry MBMS data. The information in SIB2 in the Release 8, 9, and later versions of the LTE standard do not convey the parameters necessary for the UE to support MBMS services. Even in Release 9 and later, where the MBMS system specifications are more complete, the MBSFN-SubframeConfig information element transmitted in SIB2 is still used only to indicate to the UE reservation of

potential MBSFN subframes, and it does not identify the frames and subframes that are allocated to carry one or more MBMS services, as Dr. Akl contends.

72. Section 5.8 in TS 36.331, titled "MBMS," was first added to the LTE standard in Release 9. Prior to Release 9, TS 36.331 did not include this section. *See, e.g.*, Section 5.8 in TS 36.331 v 9.2.0 and later versions set forth the scheduling, transmission, and reception of MBMS in the LTE network.

73. TS 36.331 v 9.2.0 described a new system information element—"SystemInformationBlockType13" ("SIB13"). TS 36.331 v9.2.0 Section 6.3.1. SIB13 was not included in previous releases of the standard and was not included in TS 36.331 v.8.4.0, which Huawei and Dr. Akl use to support their claims of infringement. SIB13 "contains the information required to acquire the MBMS control information associated with one or more MBSFN areas." TS 36.331 v10.0.0 Section 6.3.1; *see also id.* at Section 5.8.1. SIB13 informs the UE of certain control information related to MBSFN, including scheduling information for MBMS.

> – *SystemInformationBlockType13*
>
> The IE *SystemInformationBlockType13* contains the information required to acquire the MBMS control information associated with one or more MBSFN areas.

SystemInformationBlockType13 information element

```
-- ASN1START

SystemInformationBlockType13-r9 ::= SEQUENCE {
    mbsfn-AreaInfoList-r9              MBSFN-AreaInfoList-r9,

    notificationConfig-r9              MBMS-NotificationConfig-r9,
    lateNonCriticalExtension           OCTET STRING                    OPTIONAL,   -- Need OP
    ...
}

-- ASN1STOP
```

TS 36.331 v10.0.0, Section 6.3.1 (emphasis added).

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– *MBSFNAreaConfiguration*

The *MBSFNAreaConfiguration* message contains the MBMS control information applicable for an MBSFN area. E-UTRAN configures an MCCH for each MBSFN area i.e. the MCCH identifies the MBSFN area.

Signalling radio bearer: N/A

RLC-SAP: UM

Logical channel: MCCH

Direction: E-UTRAN to UE

MBSFNAreaConfiguration message

```
-- ASN1START

MBSFNAreaConfiguration-r9 ::=       SEQUENCE {
    commonSF-Alloc-r9                   CommonSF-AllocPatternList-r9,
    commonSF-AllocPeriod-r9             ENUMERATED {
                                            rf4, rf8, rf16, rf32, rf64, rf128, rf256},
    pmch-InfoList-r9                    PMCH-InfoList-r9,
    nonCriticalExtension                MBSFNAreaConfiguration-v930-IEs        OPTIONAL
}

MBSFNAreaConfiguration-v930-IEs ::= SEQUENCE {
    lateNonCriticalExtension            OCTET STRING                        OPTIONAL,   -- Need OP
    nonCriticalExtension                SEQUENCE {}                         OPTIONAL    -- Need OP
}

CommonSF-AllocPatternList-r9 ::=    SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF MBSFN-
SubframeConfig

-- ASN1STOP
```

TS 36.331 v10.0.0 Section 6.2.2.

81. The MBSFN-SubframeConfig transmitted in MBSFNAreaConfiguration on the MCCH is different from the MBSFN-SubframeConfig information transmitted on SIB2 as set forth in Dr. Akl's Opening Report. The difference is that when MBSFN-SubframeConfig is transmitted in SIB2, it only identifies the "reserved" MBSFN information; it does not set forth the subframes that actually contain data for MBMS services. As mentioned above, the MBSFN-SubframeConfig information in SIB2 identifies "reserved" subframes that are reserved by the base station for various purposes, not for identifying subframes that contain specific MBMS service data. In contrast, the MBSFN-SubframeConfig and the PMCH-InfoList information that are transmitted in the MBSFNAreaConfiguration message on the MCCH set forth the scheduling information needed to support transmitted MBMS service data. TS 36.331 v 8.4.0, Section

6.3.1; Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Dr. Akl only identifies the MBSFN-SubframeConfig information transmitted on SIB2, which as shown above, does not contain position information for the frames and subframes that actually contain MBMS.

82. As explained above, Dr. Akl's Opening Report fails to take into account this significant change in the standard starting in Release 9 that relates directly to scheduling MBMS in an LTE network. By relying solely on the incomplete Release 8 version of TS 36.331, Dr. Akl did not appreciate this change that took place in the standard. Instead, by relying on Release 8, he incorrectly points to position information that is not the position information of the claims—position information for the specific frames and subframes that contain the service.

C. Accused Technology is Optional in the LTE Standard

83. As explained above, Dr. Akl alleges that the Accused Products that practice 36.331 v.8.4.0 and later, Section 6.3.1, infringe the Asserted Claims of the '613 patent. The sections that Dr. Akl identifies as infringing the Asserted Claims are OPTIONAL features of the 3GPP Standard.

84. The 3GPP standards identify certain features of the standards as OPTIONAL and certain features of the standard as MANDATORY. When a feature is OPTIONAL, that field can be omitted (*i.e.*, not performed) and the UE will still comply with the respective 3GPP standards.

Alternatively, a field with optional presence may be declared with the keyword OPTIONAL. It identifies a field for which a value can be omitted. The omission carries semantics, which is different from any normal value of the field:

```
-- /example/ ASN1START

PRACH-Configuration ::=             SEQUENCE {
    rootSequenceIndex                   INTEGER (0..1023),
    prach-ConfigInfo                    PRACH-ConfigInfo                    OPTIONAL    -- Need ON
}

-- ASN1STOP
```

TS 36.331 at Section A.3.5 (emphasis added).

[redacted]

C. The Accused Products Do Not Infringe "the service being sent in one or more subframes that are designated as specific subframes, the specific subframes being selected from one or more radio frames that are designated as specific radio frames" (Claims 1 and 5)

119. Dr. Akl's infringement allegations for this limitation are based entirely on the MBSFN-SubframeConfiguration information element transmitted in the SIB2 as set forth in TS 36.331 v8.4.0, Section 6.3.1. Dr. Akl contends that a UE can use "radioFrameAllocation" element in MBSFN-SubframeConfiguration "to identify which radio frames have been designated as specific radio frames that contain MBSFN subframes." Akl Opening Report at ¶ 83. Dr. Akl also contends that "[t]he number of subframes designated as specific MBSFN subframes is defined by the "subframeAllocation" element in MBSFN-SubframeConfiguration. Akl Opening Report at ¶85.

120. As explained in detail above, the MBSFN-SubframeConfiguration transmitted in SIB2 does not contain an indication of the frames and subframes that actually contain the MBMS service. The base station transmits "radioFrameAllocation" and "subframeAllocation" elements in MBSFN-SubframeConfiguration in SIB2 as "reserved" frames and subframes that are used for other purposes, not as an indication of the frames and subframes that actually contain the MBMS service. TS 36.331 v 8.4.0, Section 6.3.1; Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Accordingly, any service being sent by a base station to a UE is not being sent in specific frames and subframes as set forth in the "radioFrameAllocation" and "subframeAllocation" elements in MBSFN-SubframeConfiguration in SIB2.

121. As explained in detail above, scheduling information related to MBMS services actually transmitted over the network, as opposed to the scheduling of reserved frames and subframes for other purposes, are sent in the MBSFNAreaConfiguration message transmitted on the MCCH. TS 36.331 v 8.4.0, Section 6.3.1; Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Although the format of the subject field within SIB2 referenced by Dr. Akl and that of the field within the MBSFNAreaConfiguration element (both called MBSFN-SubframeConfig) are similarly described, they are not put to the same use by the Accused Products, which conform to versions of the 3GPP Release 9 or later. Dr. Akl has not set forth any infringement allegations with respect to the information transmitted in the MBSFNAreaConfiguration message.

122. As mentioned above, the information in MBSFN-SubframeConfig in SIB2 is used by "legacy UEs," meaning those compliant to 3GPP standard Release 8 or earlier. For Accused Products that are compliant with Release 9 or later and enabled for MBMS, scheduling information related to MBMS is set forth in SIB13 and the MBSFNAreaConfiguration information elements conveyed over PMCH. Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Since the MBSFN-SubframeConfig information element in SIB2 does not actually set forth scheduling information related to specific MBMS services sent in MBSFN subframes, the Accused Products do not use any MBSFN-SubframeConfig information elements transmitted in the SIB2 to determine the claimed position information of the specific radio frames and the specific subframes.

141. As explained in detail above, the MBSFN-SubframeConfiguration transmitted in SIB2 does not contain an indication of the frames and subframes that actually contain the MBMS service, and therefore the elements within MBSFN-SubframeConfiguration in SIB2 that Dr. Akl points to as the received position information does not contain position information related to the specific frames and subframes that contain the claimed service (i.e., MBMS) .

142. As explained above, the base station transmits "radioFrameAllocation" and "subframeAllocation" elements in MBSFN-SubframeConfiguration in SIB2 as "reserved" frames and subframes that are used for other purposes, not as an indication of the frames and subframes that actually contain the MBMS service. TS 36.331 v 8.4.0, Section 6.3.1; Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Accordingly, any service being sent by a base station to a UE is not being sent in specific frames and subframes as set forth in the "radioFrameAllocation" and "subframeAllocation" elements in MBSFN-SubframeConfiguration in SIB2.

143. Scheduling information related to MBMS services actually transmitted over the network, as opposed to the scheduling of reserved frames and subframes for other purposes, are sent to the UE in the MBSFNAreaConfiguration message transmitted on the MCCH. TS 36.331 v 8.4.0, Section 6.3.1; Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Although the format of the subject field within SIB2 referenced by Dr. Akl and that of the field within the MBSFNAreaConfiguration element (both called MBSFN-SubframeConfig) are similarly described, they are not put to the same use by the Accused Products, which conform to versions of the 3GPP Release 9 or later. Dr. Akl has not set forth any infringement allegations with

respect to the information transmitted in MBSFN-SubframeConfiguration in the MBSFNAreaConfiguration message.

144. As mentioned above, the information in MBSFN-SubframeConfig in SIB2 is only used for "legacy UEs," and instead the information set forth in SIB13 and the MBSFNAreaConfiguration information elements set forth scheduling information regarding actually transmitted MBMS services. Qualcomm eMBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Since the MBSFN-SubframeConfig information element in SIB2 is only used for "legacy UEs" and do not actually set forth scheduling information related to MBMS services sent in MBSFN subframes, the Accused Products cannot infringe this limitation by complying with TS 36.331 v.8.4.0.

[redacted]

[redacted]

F. The Accused Products Do Not Infringe "wherein the transport channel is mapped to a physical shared data channel" (Claims 1 and 5)

152. Based on his incorrect mapping of the LTE standards to the asserted claim limitations, Dr. Akl opines that the limitation "wherein the transport channel is mapped to a physical shared data channel" is infringed, because "the SIB2 is transmitted from a base station to a UE on the DL-SCH (Downlink Shared Channel)" and that the "DL-SCH transport channel is mapped to the PDSCH physical shared data channel," citing TS 36.331 v8.4.0 Section 5.2.1.1. for support. Akl Opening Report at ¶ 106. As I explained in detail above, SIB2 is not the correct information element; SIB2 does not contain the position information of the specific frames in the time unit and the specific subframes within the specific frames that contain MBMS service data. Since SIB2 does not contain the claimed position information, the transport channel that the SIB2 is transmitted on and the mapping of that transport channel to a physical shared data channel does not show that the Accused Products infringe this limitation.

153. As explained above, TS 36.331 v10.0.0 sets forth the standards for implementing MBMS services. TS 36.331 v10.0.0 sets forth that scheduling information required to support MBMS services actually transmitted over the network, as opposed to the scheduling of reserved

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frames and subframes for other purposes as transmitted on SIB2. As explained above, the MBMS scheduling information is sent to the UE in the MBSFNAreaConfiguration message transmitted on the ***MCCH***, not the DL-SCH.

5.8.2 MCCH information acquisition

5.8.2.1 General

Figure 5.8.2.1-1: MCCH information acquisition

The UE applies the MCCH information acquisition procedure to acquire the MBMS control information that is broadcasted by the E-UTRAN. The procedure applies to MBMS capable UEs that are in RRC_IDLE or in RRC_CONNECTED.

5.8.2.2 Initiation

A UE interested to receive MBMS services shall apply the MCCH information acquisition procedure upon entering the corresponding MBSFN area (e.g. upon power on, following UE mobility) and upon receiving a notification that the MCCH information has changed. A UE that is receiving an MBMS service shall apply the MCCH information acquisition procedure to acquire the MCCH, that corresponds with the service that is being received, at the start of each modification period.

TS 36.331 v10.0.0 Section 5.8.2 (emphasis added).

154. The Multicast Control Channel ("MCCH") is a new control channel that was introduced in Release 9 and included in later releases. As set forth in TS 36.331 v10.0.0, "most of the MBMS control information is provided on a logical channel specific for MBMS common control information: the MCCH." 3GPP TS 36.321 is the MAC protocol specification for LTE, and it defines the channels connecting the upper RRC layer and the middle MAC layer. The figure below, reproduced from TS 36.321, illustrates the mapping of downlink logical channels to downlink transport channels in Release 10. As shown below, the new set of logical and transport channels (that were not included in Release 8) include the MTCH, MCCH, and MCH.

157. Accordingly, Dr. Akl has not shown that the Accused Products infringe this claim limitation.

G. The Accused Products Do Not Infringe "the position information of the specific radio frames in the time unit is represented by an interval between two specific radio frames in the time unit . . . wherein the interval is 2^m, and $0 \leq m \leq M$" (Claims 1 and 5)

158. For the same reasons the Accused Products do not satisfy receiving position information of the specific radio frames in the time unit and receiving position information of the specific subframes within the specific radio frames, the Accused Products do not infringe this limitation. Just as before, Dr. Akl's infringement allegations for this limitation are based entirely on the MBSFN-SubframeConfiguration information element transmitted in the SIB2 from the base station to the UE as set forth in TS 36.331 v8.4.0, Section 6.3.1. Dr. Akl contends that a UE receives MBSFN-SubframeConfiguration information element in the SIB2, and that MBSFN-SubframeConfiguration contains the "radioFrameAllocation" element in MBSFN-SubframeConfiguration . Akl Opening Report at ¶¶ 109-112. According to Dr. Akl, this is the claimed position information of the specific radio frames in the time unit.

159. As explained in detail above, the MBSFN-SubframeConfiguration transmitted in SIB2 does not contain an indication of the frames and subframes that actually contain the MBMS service, and therefore the "radioFrameAllocation" element within MBSFN-SubframeConfiguration in SIB2 that Dr. Akl points to as the position information of the specific radio frames does contain position information related to the specific frames and subframes that contain the claimed service (*i.e.*, MBMS).

160. Since Dr. Akl's reliance on "radioFrameAllocation" transmitted in SIB2 does not read on the claimed position information, his analysis of how the position is represented by an interval between two specific radio frames in the time unit wherein the interval is 2^m, and

$0 \leq m \leq M$ is also incorrect, because it relies on position information in the LTE standards that does not infringe the claim limitations. Akl Opening Report at ¶¶ 109-118. The fact that "radioFrameAllocation" may be represented by an interval between two specific radio frames in the time unit wherein the interval is $2^{\mathbf{m}}$, and $0 \leq m \leq M$ is irrelevant, because "radioFrameAllocation" is not the claimed position information of the specific radio frames in the time unit.

161. As explained above, the base station transmits "radioFrameAllocation" in MBSFN-SubframeConfiguration in SIB2 as "reserved" radio frames that are used for other purposes, not as an indication of the radio frames that actually contain the MBMS service. TS 36.331 v 8.4.0, Section 6.3.1; Qualcomm MBMS – LTE AS Overview (Exhibit 334 to Hyeonsoo Kim) SAMSUNG-HNDCA-000201839 – 877 at SAMSUNG-HNDCA-000201867. Accordingly, any service being sent by a base station to a UE is not being sent in specific radio frames as set forth in the "radioFrameAllocation" element in MBSFN-SubframeConfiguration in SIB2.

[redacted]

[redacted]

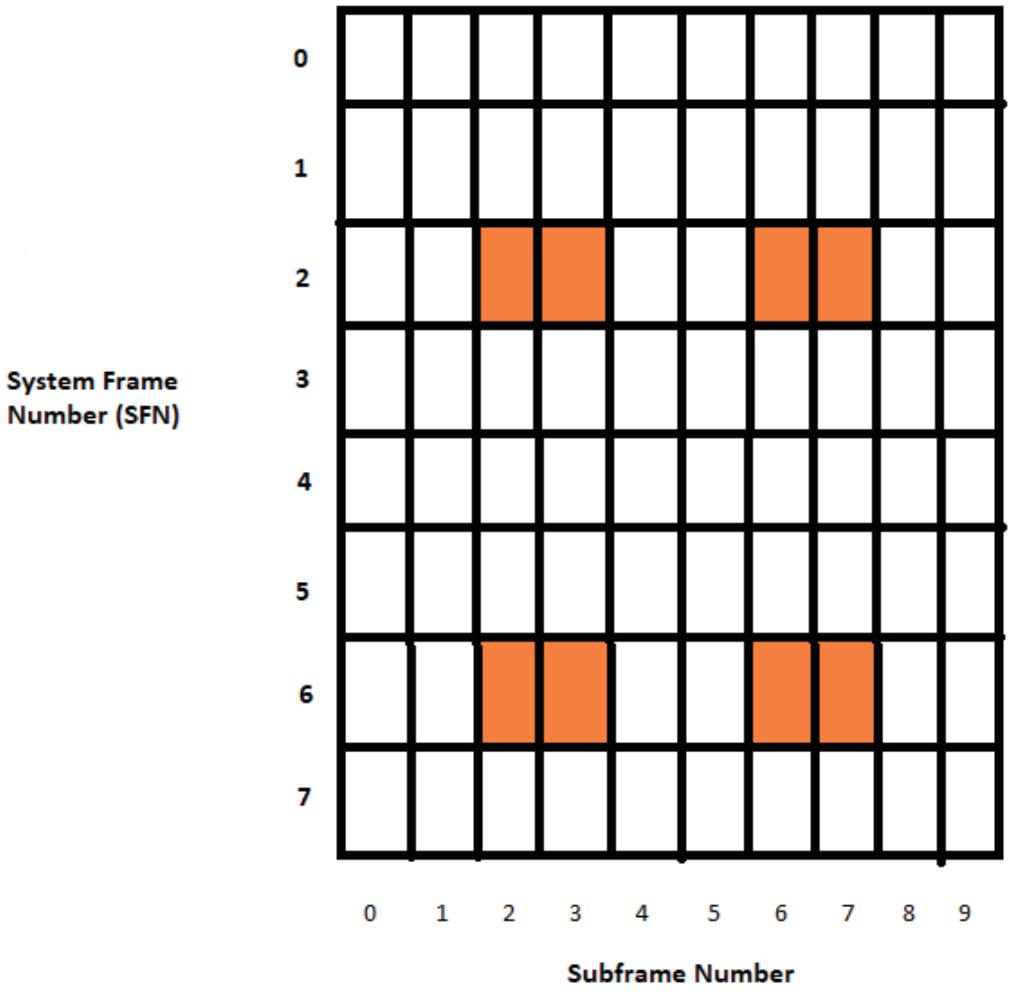
J. The Accused Products Do Not Infringe When Operating in Systems Using Non-Zero Offset Values (Claims 1 and 5)

171. The asserted claims require that "the position information of the specific radio frames in the time unit is represented by" one of the formulations listed in the final two claim limitations. These formulations assume a regular spacing of the specific frames within the time unit, where the first specific frame in the time unit begins at the first frame of the time unit. The claims do not provide a mechanism for representing the position of the first specific frame in the time unit to be anywhere other than the first frame of the time unit—a non-zero offset. In other words, the asserted claims do not allow there to be an "offset" of frames in addition to the regular spacing of the specific frames within the time unit. When there is a non-zero offset, the Accused Products do not infringe the asserted claims.

172. Based on Dr. Akl's infringement allegations, the 3GPP LTE Standards define an offset (*e.g.*, through the use of the defined parameter "radioFrameAllocationOffset" in "MBSFN-

SubframeConfiguration.") Under Dr. Akl's infringement allegation, knowledge of this offset value is required for accurate representation of the alleged position information of the specific radio frames.

173. Below I detail an example where a non-zero offset would not infringe the asserted claims under Dr. Akl's infringement analysis.



174. In the example above, the carrier has configured the MBMS specific subframes using the oneFrame option, and subframe numbers 2, 3, 6, and 7 have been selected in each

specific MBMS system frame. *See* TS 36.331 v8.4.0 at 102-104. The radioframeAllocationPeriod has been selected to be n4, which is m=2 under Dr. Akl's infringement analysis. The radioframeAllocationOffset has been selected to be 2. Thus the specific radio frames carrying the service appear in frames with SFN 2, 6, 10, etc.

175. With just the information set forth in the asserted claims, the claims would not read on this scenario under Dr. Akl's infringement allegations. Without an indication of the offset value, the asserted claims would not identify the frames carrying the MBMS service in this example. Under Dr. Akl's infringement allegations, his infringement allegations only apply when the offset is zero, meaning it starts with the first frame. Therefore, even under Dr. Akl's incorrect infringement theory, when the offset is non-zero, there is no infringement.

K. The Accused Products Do Not Infringe When Operating in Certain FourFrame Subframe Allocations

176. The MBSFN-SubframeConfiguration can be configured for oneFrame allocation or fourFrames allocation. *See* TS 36.331 v8.4.0, Section 6.3.1. Dr. Akl incorrectly contends that the Accused Products operating in fourFrames allocation mode infringe the '613 patent claims. Under Dr. Akl's infringement allegations, in many situations, the Accused Products do not infringe the asserted claims when operating in fourFrames allocation mode.

177. Under Dr. Akl's infringement allegations, in oneFrame allocation mode, the subframe allocation of MBMS services is done within a single frame. The subframe allocation for a single frame is repeated based on the radioframeAllocationPeriod, which, according to Huawei's infringement contentions, is sent in the SIB2 information element from the base station to the UE. Under Dr. Akl's infringement allegations, when the subframeAllocation within the MBSFN-SubframeConfiguration is set for oneFrame allocation mode, the subframeAllocation

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Date

David Lyon, Ph.D.